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AUTHOR Stellaccio, Cherie K.; McCarthy, Marie
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ABSTRACT

Because intuitive aptitude for music stabilizes at about age 9 years, the early childhood years are critical to the development of children's potential for comprehending and producing music. This literature review centers on studies that have expanded knowledge of how young children perform, perceive, and create music and thus develop their natural inclination to make music. The review summarizes findings from research of music performance, including vocal development and song acquisition and rhythm and movement. Also discussed are findings from research on music perception and cognition, focusing on pitch and rhythm. The affective development of children's musical inclinations is also examined, including appreciation, attitudes, interests, and preferences. Findings are presented from research on musical creativity and play. The review notes that research findings provide vital information for sequencing early childhood music curricula in which young children develop musical perception and cognition, and acquire music skills and musical values. The review maintains that some areas are underresearched, such as the development of preferences for popular music, the relationship between conceptual/cognitive development and skill development, and the transition from elemental musical play to refined creative performance. The review concludes with a glossary of music terms. (Contains approximately 143 references.) (KB)

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CHAPTER 8

Research in Early Childhood Music and Movement Education

CHERIE K. STELLACCIO
MARIE MCCARTHY

Amy Detjen

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ALL CHILDREN, from birth, demonstrate an intuitive aptitude for thinking in tonal and rhythmic patterns (Gordon, 1990). Because intuitive aptitude for music stabilizes at about age 9 (Gordon, 1989), the early childhood years are critical to the development of the child's potential for comprehending and producing music. In a rich musical environment with appropriate guidance from adults, the young child learns to perceive, imitate, and discriminate among *rhythm* and *tonal patterns* with increasing precision (for all italicized terms, see the glossary at the end of this chapter). Thus the child begins to form concepts of *musical syntax*. In the developmental years, while assimilating music concepts into personal music-making, the child prepares for a lifetime of understanding, performing, and enjoying music "as a musician" (Gordon, 1990, p. 37).

Research in early childhood music education provides an overview of the nature of musical performance and perception and of factors that influence children's developmental music aptitude. This literature review centers on studies that have expanded knowledge of how young children perform, perceive, and create music and thus develop their natural inclination to make music.

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MUSIC PERFORMANCE

Vocal Development and Song Acquisition

Studies in the vocal development of young children are numerous, and more is known about how children's singing voices develop than about any other topic in early childhood music education (Levinowitz, 1991). Major studies of infant vocal development have been done by Wendrich (1981), Fox (1982), and Ries (1982). Results of these observations indicate that infants (3 to 4 months of age) begin to experiment with sound; they can match *pitches* of a rather wide range (Fox, 1982); and their vocal experimentation typically has descending *melodic contours*. Aural discrimination and the vocal ability to express it are present as early as 7 months (Ries, 1982), and a high degree of musical acculturation is evident at that time (Levinowitz, 1991).

One of the most popular topics for investigation is pitch accuracy, due to its importance in tuneful singing. Goetze (1985) found that children (kindergarten through grade 3) sing more nearly at pitch level when they sing on a neutral syllable rather than with a text. But in a similar study with 4- to 5-year-olds, Levinowitz (1989) reported no difference in rhythmic accuracy but improved tonal accuracy when singing with words.

Goetze and Horii (1989) found that children sing more nearly at pitch level when they sing individually rather than in a group. This finding points to the fact that successful individual singing may precede successful group singing. In a related study, Rutkowski (1996) determined that individual/small-group singing activities did have a positive effect on the vocal development and competence of kindergarten children.

Vocal development seems to demand consistent attention to numerous skills that all contribute to the development of pitch accuracy and singing competence. For example, Davidson (1985a) found that it normally takes 4 to 5 years of singing experience for a *scale* to become a useful scheme for the child. In his opinion, "scalar knowledge may be the capstone of a whole set of subskills" (p. 26).

A number of studies confirm that development of one vocal skill, such as pitch matching, does not necessarily affect other vocal skills (e.g., pitch discrimination, vocal range, *interval* production), nor does training in pitch perception lead to improved pitch accuracy in singing (Apfelstadt, 1984; Buckton, 1983; Flowers & Dunne-Sousa, 1990; Geringer, 1983; Ramsey, 1983; Roberts & Davies, 1975). In Geringer's (1983) study of preschoolers, there appeared to be no relationship between a child's ability to echo a pitch accurately (pitch matching) and success in pitch discrimination. Flowers and Dunne-Sousa (1990) found that the ability to

maintain a *tonal center* in a song and the ability to echo pitch patterns appear to be largely separate skills with 3- to 5-year-olds.

In the area of song acquisition, landmark studies have been completed, many with the advantage of being longitudinal in nature. Gardner (1983) identified a specific sequence for song acquisition. From producing undulating melodic fragments at approximately 15 months, the child progresses to intentionally produced melodic intervals (major 2nd, minor 3rd) at 18 months. By 2½ years, intervals are expanded to include 4ths and 5ths, and spontaneous song becomes a feature but as yet lacks *tonality* and rhythmic regularity. Two-year-olds also intersperse fragments of learned songs in spontaneous song, and by 3 years of age, learned songs with a developed lyrical and rhythmic structure are dominant. At age 4, children are capable of retaining *lyrics* and rhythms for learned songs, and melodic contour is mastered. Children's ability to identify the *beat* and to maintain tonality across *phrases* develops around age 5, a finding that concurs with Davidson, McKernon, and Gardner (1981), who earlier had determined that by 5 years of age the sense of tonal stability becomes well established.

Davidson (1985a) studied nine children when they were 1 to 6 years of age and concluded that "the mature performance of a song requires the use of highly sophisticated knowledge and skills that have their origin in the preschool years" (p. 25). He identified three levels of song mastery: (1) the acquisition of words and rhythmic surface of the song, (2) the mastery of melodic contour without exact pitch relationships or tonal center, and (3) stabilization of pitches and interval relationships.

In a study of children aged 5 months to 5 years, Holohan (1987) observed three qualitatively different levels of music performance. At the first level, children perform discrete music elements (e.g., a pitch, a tonal or rhythm pattern, a movement) concurrently with a music stimulus. Children proceed at the second level to perform combinations of discrete music elements, but they lack tonal and rhythmic organization or syntax. Children at this level are increasingly capable of spontaneous performance in the absence of a music stimulus. At the third level, children's spontaneous performances become more coherent and organized. They demonstrate an awareness of relationships between sounds of music in memory and those being performed in the present. Holohan's study demonstrates that spontaneous music-making is an integral and significant part of early childhood musical development (Levinowitz, 1991).

Rhythm and Movement

The nature of children's movement to music progresses from spontaneous pleasure responses (e.g., swaying, bouncing) in infancy to complex,

dancelike movements with hand gestures between 4 and 6 years of age (Gilbert, 1979, 1981; Moog, 1976a; Rainbow, 1977; Rainbow & Owen, 1979). Although young children are stimulated to move to music, their movements often are not synchronized with music in response either to a prescribed steady beat (Rainbow, 1981; Sims, 1985), specific rhythmic qualities, or overall music affect (Holohan, 1987; Sims, 1985). When synchronized rhythmic movement among young children occurs, it is likely to relate to *tempo* or a prominent beat (Metz, 1989; Sims, 1985). Music performance tasks requiring synchronization and movement activities requiring eye–hand coordination are most challenging for young and physically or mentally handicapped children (Gilbert, 1983). Speech rhythms are easiest for the youngest children, keeping a steady beat with clapping or rhythm sticks is manageable for 4-year-olds, and synchronous tasks requiring large-muscle movement are most difficult for young children (Frega, 1979; Gilbert, 1981; High, 1987; Rainbow, 1977; Rainbow & Owen, 1979). Four- and five-year-olds have difficulty with simple motor rhythmic tasks at a fast tempo (Rainbow & Owen, 1979), and simultaneous tasks such as moving and singing present a challenge to these children (Holohan, 1987; Rainbow & Owen, 1979).

Sims (1985) found that when left to their own resources under minimally structured conditions, children tend not to utilize a full range of movement categories (locomotor, axial, stationary, nonmovement). Three-year-olds are likely to remain stationary while 4- and 5-year-olds tend to utilize locomotor movement. Girls are more likely than boys to move axially. Whatever the form, young children tend to limit their movement to repetition of a few patterns. Whether such movement behavior is attributable to fascination with movement repetition (Haselbach, 1971) or limited movement repertoire (Sims, 1985) is uncertain.

Research suggests that motor, cognitive, and perceptual skills are interrelated. In a longitudinal study of children ages 5 to 8, Gilbert (1983) found a strong correlation between performance on her Motoric Music Skills Test (MMST) and Gordon's (1979) test of rhythm and tonal perception. Lewis (1986) reported that intensive movement instruction had a positive effect on primary school children's perception of dynamics and melodic direction when listening to music.

Studies by Metz (1989) and Miller (1983) provide substantive information for guiding children's movement responses to music. Metz noted that up to age 4 children are inclined to imitate their peers. However, as children mature, a social "taboo" on peer copying without invitation develops naturally, and that promotes divergence. Adult modeling combined with verbal description and suggestion is most effective in generating differentiated and synchronized movement to music. Both Metz and

Miller suggest that music be carefully selected to support children's spontaneous movement response rather than forcing conformity to "arbitrarily selected musical elements" (Metz, 1989, p. 56).

MUSIC PERCEPTION AND COGNITION

The development of perceptual and cognitive music skills requires the ability to perceive, discriminate, and recall aspects of the performance, such as *melody*, rhythm, timbre, or instruments. Ramsey (1983) points out that, just as visual perception changes as children's cognitive structures change and develop, auditory perception may also differ with age and experience. Children appear to develop the ability to respond to various elements of music in a sequential manner (Zimmerman, 1971). It is generally accepted that pitch and harmony concepts develop later than concepts of dynamics, timbre, tempo, and duration (Greenberg, 1976). Sims (1991) makes several important points regarding preschool children's listening abilities:

- Most young children may not be ready for music-listening tasks requiring attention to more than one element at a time.
- Children can easily learn to make and label single discriminations and are receptive to learning and using language to describe music.
- Children's ability to make discriminations based on their own performance may develop earlier than their ability to make discriminations in listening situations.

Pitch

Several researchers have shown that infants are aware of and can discriminate differences in pitches and tonal patterns (Bridger, 1961; Chang & Trehub, 1977; Summers, 1984). In a developmental sequence for melodic information processing, Dowling (1982) suggests a movement from perception of gross features, such as melodic contour, to more precise features of tonality and interval. Sergeant (cited in Simons, 1986) lists pitch-related concept development in this order: pitch, melody, tonality, and harmony.

Studies of pitch discrimination and melodic perceptual abilities with preschoolers indicate that age is a factor in the development of perceptual accuracy (Jordan-DeCarbo, 1989; Ramsey, 1983). Ramsey (1983) concluded that preschool children do perceive contour and interval aspects of melody, and that the accuracy of perceptions increases with age. Web-

ster and Schlentrich (1982) found that recognition of pitch direction improved with age, but nearly one-third of their 3- to 5-year-old subjects could not perform this discrimination.

Children's inability to communicate understanding of concepts such as melodic direction, register, contour, and interval size may be due more to response mode than to a lack of conceptual understanding (Webster & Schlentrich, 1982). Results of numerous studies indicate that performance-based response modes are better measures of pitch discrimination than verbal response (Hair, 1977, 1982; Scott, 1977; Webster & Schlentrich, 1982). Young children frequently confuse terms associated with musical pitch and with tempo and dynamics (high/up; low/down; loud/fast; quiet/slow) (Crowther & Durkin, 1982; McMahon, 1985; Van Zee, 1976; Young, 1982). Ability to deal verbally with concepts of pitch does not necessarily develop concurrently with children's ability to perceive and understand them. Training is necessary to bridge the two disparate abilities. For example, Wassum (1980) argues that the concept of tonality is a "learned" concept and recommends consistent teaching of songs and scale-singing to develop this concept.

Scott-Kassner (1992) makes the point that children's use of, or preference for, physical or gestural responses lends credence to "theories of the existence of verbal/tactile substructures that may help children mediate their musical experience." She also writes: "Perhaps children in [preschool] categories must physically or vocally replicate the musical stimuli to get at the substructure" (p. 636).

One of the last pitch-related concepts to develop is harmony. This may be due to the child's centered perception and inability to attend to more than one element at a time. Bridges (1965) studied children in grades K–3 and found a gradual development in harmonic discrimination ability. Moog (1976b) observed preschoolers' responses to dissonance and concluded that the child is "deaf" to harmony until at least age 6. Hair (1973), on the contrary, found that the majority (83%) of first-graders could identify pairs of chords as being the same or different. Bartlett and Dowling (1982) discovered that it is easier to distinguish between melodies from harmonically distant *keys* than from harmonically similar keys. Peery's (1993) results suggest that harmonic key becomes a part of "the cognitive-cultural structure that humans use to understand music at an early age" (p. 210).

Rhythm

In the most general sense, rhythm is the temporal structure of music. Numerous studies establish aural perception as fundamental to children's

understanding of rhythmic structures and their acquisition of musical rhythmic performance and rhythm reading (Bamberger, 1980, 1982; Davidson & Colley, 1987; Hildebrandt, 1985; Lehrdahl & Jackendorff, 1983; Smith, 1989; Upitis, 1985, 1987a, 1987b, 1987c).

Extensive Piagetian-based research of the 1960s, 1970s, and early 1980s (Hargreaves & Zimmerman, 1992) and research into the relationship and interaction of rhythm knowledge and skills with other cognitive theories and models (Davidson & Colley, 1987; Demorest, 1989, 1992; Lehrdahl & Jackendoff, 1981, 1983; Upitis, 1987a) attest to age-related increases in children's perception of rhythm structures (Davidson & Colley, 1987; Gilbert, 1981; Moog, 1976b; O'Hearn, 1984; Wang & Salzberg, 1984). Several studies outline a developmental sequence in concept formation from beat to rhythm pattern to *meter* that is manifest in both rhythm perception and performance (Cox, 1977; Jones, 1976; Serafine, 1975).

Musical training appears to have a differential effect on the perception of rhythm (Demorest, 1989). Musically inexperienced listeners attend more exclusively to rhythmic qualities over tonal qualities (Davidson, 1985b; Demorest, 1989; Monahan & Carterett, 1985; Moog, 1976a), and this appears to increase with age. However, among the musically trained, sensitivity to pitch and rhythm develop proportionately (Demorest, 1992; Demorest & Serlin, 1997; Dowling, 1988). It may be that sensitivity to rhythmic information develops through informal music experiences, whereas sensitivity to pitch requires more intensive training (Demorest, 1992; Demorest & Serlin, 1997). Noting a tendency to emphasize rhythmic activities in early school experiences, researchers recommend a shift in emphasis to pitch elements as children acquire experience and maturity (Demorest, 1989, 1992; Demorest & Serlin, 1997).

Children's capacity to discriminate tempo in music appears to be fundamental to their rhythmic perception, apprehension, and performance (Sheldon, 1994). Ability to perceive tempo differences emerges early (Lawton & Johnson, 1992) and likely is more related to general developmental differences (Mills, 1985; Moog, 1976b; Petzold, 1966; Wang & Salzberg, 1984) than to either motor differences (Miller & Eargle, 1990) or music training (Geringer & Madsen, 1984; Miller & Eargle, 1990; Sheldon, 1994; Wang, 1984). Accuracy in performing a steady beat and tempo is relative to a child's innate, personal tempo and stabilizes by third grade (P. Brown, 1981; Clynes, 1982; Petzold, 1966). Research to determine whether increasing or decreasing tempi are easier to discriminate is inconclusive (Britten, 1992; Geringer & Madsen, 1984; Madsen, 1979; Madsen, Duke, & Geringer, 1986; Miller & Eargle, 1990; Sheldon, 1994; Wang, 1984; Yarbrough, 1987), but convincing evidence exists to verify

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that tempoo perception is affected by other elements within a music composition, eespecially the rhythm of the melody (Davidson & Colley, 1987; Duke, 19990; Kuhn, 1987; Kuhn & Booth, 1988; Sink, 1983; Wang, 1984).

Studiees investigating children's rhythm response in a variety of psychomootor contexts provide more comprehensive understanding of rhythm deevelopment. Bennett (1991) found that when given a choice of modes, , children can accurately perceive and perform quite complex patterns. HHowever, their preferred mode for executing rhythmic patterns is to sing oon a neutral syllable rather than tap or write using idiosyncratic forms of nnotation. Studies by Davidson and Colley (1987) and by Upitis (1987a) suuggest the existence of a hierarchy of rhythmic perceptual skills. Before agee 5 children's perception of rhythm is dependent on rhythmic patterns obf the words of a song, and they are generally unable to notate even a basiic steady beat. From this point children progress rapidly. By age 7 most chilildren can recall a rhythmic pattern without the aid of text, and they are abble to notate and perform steady beat and rhythmic patterns (Davidson & Colley, 1987; Upitis, 1987c). However, Upitis notes (1987a) that childreen most advanced in their understanding of rhythmic relationships have had extracurricular music training.

AFFECTIVE DEVELOPMENT

The affectiive dimension of children's musical development encompasses appreciatioons, attitudes, interests, and preferences. Scott-Kassner (1992) makes a diistinction between "affect" as the emotional aspect of responding to musiic and "preference" as the selection of certain stimuli over others. Both aaffect and preference, she points out, may or may not imply valuing. Foor the purpose of this discussion, musical preference is regarded as an integgral component of affective learning while simultaneously recognizing thhis distinction.

Historiically, the status of music in early childhood curriculum owes much to itts perceived power to influence feelings and emotions (McDonald & SSimons, 1989). Kalliopuska and Ruokonen (1986) report that listening too music is similar to emotional empathy in that the listener must tempoorarily try to experience feelings simulated by the music, thus facilitating s social interaction. In a similar vein, Saffle (1983) believes music can be a a vehicle for communicating information about aesthetics from different cuultures. It is important to acknowledge that the affective dimension of f music learning "does not occur in a vacuum but is connected with cognititive and perceptual development" (Zimmerman, 1971, p. 210). Thus, whenn one considers the formation of attitudes and values in early

childhood music education, it includes the development of music concepts and skills that facilitate understanding and perception of music.

Studies of affective response to music are sparse, partly due to the difficulty of investigating this area of musical response with young children. Infants are reported to have shown affective reactions to music (Michel, 1973; Moog, 1976b; Tims cited in McDonald & Simons, 1989). Nelson (1985) attempted to apply Parson's theory of aesthetic growth in the area of music with 3- to 17-year-olds and found a high correlation between the quality of aesthetic response and age. The trend in responding was from egocentric standards in the young children to more external standards in the older ones. Gardner and colleagues (Gardner, Winner, & Kircher, 1975) and Terwogt and Grinsven (1988) report that preschoolers can understand the emotional, or affective, meaning of music, while Peery (1993) argues that they have considerable ability to understand the affective meaning of music (happy, sad, angry, afraid) in ways similar to adults (p. 210).

Approaching the root problem of investigating aesthetic responsiveness with young children, McMahon (1987) tested 3- to 5-year-olds on their ability to make and justify aesthetic choices with visual, tactile, and auditory musical stimuli. She found that children could more easily verbalize their responses to objects in the tactile and visual realm than the auditory.

Studies of the development of musical preferences are numerous, and many include the early childhood years. Based on research findings of several studies, Peery (1993) identified three frequently occurring hypotheses regarding the formation of musical preferences: music training or repeated exposure to particular music, social influences, and certain qualities inherent in the music, particularly style.

The use of repetitive listening as a strategy for developing or modifying musical preference has been employed many times in research studies. Schuckert and McDonald (1968) were not able to influence preschoolers' musical preferences significantly solely by exposure to less preferred music; however, the study was limited to four sessions and children listened individually to the less preferred music while they examined such materials as puzzles. Not only is short-range exposure unsatisfactory for developing preference for a particular music, but merely exposing children to music is not sufficient in developing preferences.

A second hypothesis used in studying the formation of musical preference is rooted in social learning theory. Approval and support by adults and teachers have a positive influence on what music children select or prefer (Callihan & Cummings, 1985; Dorow, 1977; Greer, Dorow, & Hanser, 1973; Greer, Dorow, Wachhaus, & White, 1973). Greer, Dorow

and Hanser (1973) concluded that children can be encouraged to listen to symphonic music over rock or "white noise" by listening with an adult who shows approval. A. Brown (1978), in comparing the effect of televised lessons to lessons taught by a teacher, also confirmed the importance of the physical presence of adults interacting with children and music in the formulation of musical preferences. Peery and Peery (1986) studied preschool children to determine the effects of positive social experience on musical preference. An experimental group received 10 months of weekly 45–minute classes. When exposed to classical music in a variety of activities and to positive reinforcement responses, experimental group children retained their enjoyment of all kinds of music, whereas, by the end of the same period, a control group had begun to show preferences for popular music.

Finally, the formation of musical preference is influenced by qualities inherent in the music, most particularly style (Peery & Peery, 1986). Preschoolers display an openness to all musical styles (Sims, 1986)—or at least have an equal preference for popular and classical styles (Greer et al., 1974; Peery & Peery, 1986; Sims, 1986). As children get older, popular music is increasingly preferred to classical music (Greer et al., 1974; LeBlanc, 1979). It is widely accepted that a trend toward a preference for rock music over nonrock music begins during the fifth year of age (Greer et al., 1974; Peery & Peery, 1986) and seems to become more established as children get older (May, 1985). Peery and Peery (1986) believe that "what you don't hear, you come to like less well" is a contributing factor to the development of stylistic bias. This bias, they suggest, can be avoided by exposing children to music appreciation training in the preschool classroom.

Children are sensitive to musical timbre from an early age, and this element of music enters into their listening preferences and responses. Michel (1973) reported that an infant can distinguish between two different timbres at age 2 or 3 months after a small number of repetitions. Fullard (1967) showed how 4-year-olds could identify instruments after instruction. Loucks (1974) found a significant increase in timbre discrimination ability with age. Scott (1977) studied the effects of timbral preference on the ability of preschoolers to classify differing pitch stimuli. Children's preference for one type of sound does not appear to interfere with their ability to classify musical pitches. Young children's sensitivity to musical timbre indicates that instruction in this element may be a useful and efficient way of approaching music listening and developing music appreciation and understanding.

Other strategies for effectively involving young children in music-listening activities and/or shaping their music preferences include use of

props to act out music while listening (Callihan & Cummings, 1985). Similarly, Sims (1986) found that children are more attentive when given a hand movement activity in which to participate. She recommends that "listening experiences for young children should be characterized by active student involvement, and should be presented by the teacher with high levels of eye contact and expressiveness" (Sims, 1991, p. 7).

MUSICAL CREATIVITY AND PLAY

Musical creativity develops under a variety of conditions and is revealed in a variety of behaviors (Webster, 1992). One body of research pertaining to creativity centers on children's musical compositions and improvisations as windows to musical thought (Bamberger, 1986; Brand & Strauss, 1997; Kratus, 1985, 1989; Levi, 1991). Another body of research more specific to the very young child investigates musical play as a factor in the development of creative thought.

Children's play is a creative venture (Vandenberg, 1980). A connection between children's play and divergent-thinking tasks is well established (Dansky & Silverman, 1973; Li, 1978). The Pillsbury studies stand as a landmark to the exploration of children's creative musical development through play. In their unhampered musical play, children of the Pillsbury Foundation School (aged 1 through 8) revealed a natural inventiveness in their chanting, singing, and instrumental exploration, from which Moorhead and Pond (1978) determined fundamental characteristics of creative musical behavior in young children. The authors reported that children used instruments to test and compare sounds as they explored wide intervals, pitch contrasts, and tone colors. In rhythmical speech phrases, chanting and singing that occur spontaneously in play activities, children demonstrated an innate musicality, especially a sense of function and form (repetition and contrast of musical idea), which is generative and continues to develop through their musical improvisations.

A small number of studies have been conducted that record the nature and properties of children's musical play. Tarnowski and Leclerc (1994) observed emerging musical behavior in the free-play of 38 children (aged 4 through 5). Children engaged primarily in spontaneous vocal and rhythmic movement behaviors to describe, act out, or express feelings about their nonmusical play activities. Of vocal behaviors, the greatest number were extemporaneous, original songs that children sang while engaged in other play activities. Other spontaneous vocal behaviors were standard songs that children had learned in more formal settings;

vocal explorations and inflections such as sounds to depict animals, machines, or human actions; rhythmic speech patterns; and chants in a sing-song *sol-mi* or *sol-mi-la-sol-mi* pattern made up to express self-actions or respond to the play-acts of other children. Rhythmic movements included full body movement and moving a play object in a rhythmic way.

Observations of preschoolers' play behaviors confirm that children, in their natural settings, spontaneously engage in frequent vocal, instrumental, and movement play in a variety of forms relative to different social contexts (Moorhead & Pond, 1978; Shelley & Foley, 1979). When materials and sound sources are provided, children engage in greater numbers of spontaneous musical play behaviors than in nonmusical play settings (Littleton, 1991). It is unfortunate, then, that surveys of preschool music programs indicate that few opportunities for experimenting with musical sound are made available to children (Golden, 1990; Tarnowski & Barrett, 1992) when an environment conducive to free exploration of sound and sound construction can be readily established in preschool settings (Shelley, 1981).

Children's musical play is important to acquisition of vocal and rhythmic skills in young children (Davidson et al., 1981; Littleton, 1991), but play opportunities in which musical behaviors can evolve are often sacrificed to teacher-directed activities designed to accomplish the goals of an established curricular program (Dorman, 1990; Littleton, 1991; Shehan-Campbell, 1990). Rohwer (1997) identified several conditions that restrain creativity. They include surveillance, excessive reward systems, competition, too much teacher control, restriction of choice in activities, time limits, and "the burden of expectation" (p. 10). Similarly, Tarnowski and Leclerc (1994) investigated the effects of four adult–child interaction styles on the musical play of preschoolers. After various forms of vocal play were modeled, the children were observed in free-play time with puppets. Of 120 musical play behaviors observed, the largest number of spontaneous incidents occurred when adults watched but did not enter into the play. In three categories where adults were partners in initiating or directing children's musical play activities, the number of spontaneous play incidents was inversely proportional to the degree of adult involvement. Noting that children in the more adult-directed activities demonstrated concern for "correct" actions and sounds, Tarnowski and Leclerc (1994) concluded that, in general, adult-directed activities encourage convergent thinking and minimize capacity to engage in divergent musical explorations and constructions.

Concerned with the pervasiveness of teacher-directed learning, Pond (1981) wrote: "Unless instruction and pedagogical disciplines could be creatively related to the emergent needs that the children's discovery of

sound [bring] to light, there [is] no possibility that . . . the life-giving reality of music" could be accomplished (p. 4). Pond's words remind the educator that creativity, a trait valued not only in music but in "many aspects of life" (Rohwer, 1997, p. 10), can flower in the early years from a musically rich environment in which children are encouraged to explore their creative options.

CLOSING REMARKS

The musical impulse is strong in young children. The primary years of nurturing musical potential are the infant and early childhood years, while music aptitude is still developing. It is imperative to use the child's natural musical impulses to sing, to move, and to play with sound to build upon and respond to their musical spontaneity.

Research findings are providing vital information for sequencing early childhood music curricula in which young children develop musical perception and cognition, and acquire music skills and musical values. However, important questions are still underresearched. For example, we know that children begin to develop preferences for popular music at 5 to 6 years of age. How can we as teachers maintain their openness to musical styles, and what impact does exposure to a variety of world musics have on developing musical preferences? More needs to be known about the relationship between conceptual/cognitive development and skill development, such as why there seems to be little carryover from developing concepts of pitch to pitch accuracy in singing. Other areas in need of further research include the relationship between vocal development and social skill development; the role of language in the development of music perception; and the transition from elemental musical play to refined creative performance.

GLOSSARY

Beat. The steady, underlying pulse present in most music.
Interval. The distance between two pitches.
Key. Identical with *scale;* that which determines the relationship of all pitches contained in a music composition.
Lyrics. The words or text of a song.
Melody. An organized succession of pitches.
Melodic contour. The shape or outline of a succession of pitches determined by tonal movement from high to low/low to high.

Meter. The grouping of beats in music.
Musical syntax. Orderly arrangement of tonal and rhythmic elements in music.
Phrase. A musical statement with a distinct beginning and a distinct ending, comparable to a clause in language.
Pitch. The "highness" or "lowness" of a musical tone as determined by the number of vibrations per second.
Rhythm. The organization of the duration of sound.
Scale. A pattern of pitches arranged in ascending and descending order as determined by a specified order of half-steps and whole steps.
Tempo. The speed at which musical sound progresses in time.
Tonal center. The central tone of a key and the first tone of a scale.
Tonality. The relationship of tones in a scale to the tonal center.
Tonal pattern. A distinctive succession of pitches that becomes a model or plan used in organizing a musical composition.

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